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CLIENT COMPUTER HAVING SOFTWARE INCLUDING A
PLURALITY OF FUNCTIONS, SERVER COMPUTER, SYSTEM
INCLUDING BOTH, CONTROL METHOD OF THEM, RECORD
MEDIUM STORING PROGRAM READABLY BY COMPUTER FOR
5 IMPLEMENTING CONTROL METHOD

BACKGROUND OF THE INVENTION

Field of the Invention

The present invention relates to a client
10 computer, a server computer, a system including both of
them, a control method of them, and a record medium
storing a program readably by a computer for
implementing the control method.

Description of the Related Art

15 The charging of a price for the use of software
is conventionally performed on the basis of a unit
price of packaged software. That is, there are many
cases where the charging of a price for the use of
software is performed as the selling price of packaged
20 software capable of executing a plurality of functions.
Although the cases where software is sold through the
Internet come to increase as the Internet becomes
popular in recent years, the charging is performed by
the selling price as packaged software even in such a
25 case.

However, in the conventional charging method,
when using software by adding a new function, a user

FOOTNOTES

has to pay the selling price of the software itself including the added new function, and has to re-install the software itself. Moreover, when using software, which was bought through a web site on the Internet, by adding a new function, a user has to download the software itself including the added new function from a web site, and then the user has to spend time and costs for the downloading.

10 SUMMARY OF THE INVENTION

One object of the invention is to perform charging automatically without troubling a user when a new function is added to software and to decrease time and costs at that time in an embodiment of the present invention.

Other objects and features of the invention will be apparent from the following description and drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

20 Fig. 1 is a block diagram of a network of a client/server system of an embodiment of the present invention;

Fig. 2 is a diagram showing an office layout of the client/server system 100 of Fig. 1;

25 Fig. 3 is a diagram showing a graphical user interface in the client/server system 100 of Fig. 1;

Fig. 4 is a diagram showing the graphical user

Fig. 5 is a flowchart showing the web access processing of a client computer when a copy function is added;

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Fig. 8 is a flowchart showing a variant of the web access processing of a client computer when the copy function is added;

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Fig. 11 is a diagram showing the graphical user interface in the client/server system of Fig. 8.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

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Fig. 1 is a block diagram of the network of a

client/server system according to an embodiment of the present invention.

In the client/server system 100 of Fig. 1, a web server 31 as a server computer is connected with a network 28 through a router 29 and the Internet 30.

The network 28 is directly connected with personal computers (hereinafter referred to as PC's) 3, 6, 9, 12, 14, 16, 19, 22, 25 and 27, printers 13 and 15, and a modem 26. The PC's 3, 6, 9, 12, 19, 22 and 25 are respectively connected with a printer 1, a scanner 4, a printer 7, a scanner 10, a scanner 17, a printer 20 and a modem 23 through signal lines 2, 5, 8, 11, 18, 21 and 24.

Fig. 2 is a diagram showing an office layout of the client/server system 100 of Fig. 1.

In the office layout of Fig. 2, five groups A, B, C, D and E and five groups F, G, H, I and J are disposed on both sides of a passageway. To put it concretely, the printer 1 and the PC 3 are disposed in the group A; the scanner 4 and the PC 6 are disposed in the group B; the printer 7 and the PC 9 are disposed in the group C; the scanner 10 and the PC 12 are disposed in the group D; and the printer 13 and the PC 14 are disposed in the group E. Moreover, on the opposite side of the passageway, the printer 15 and the PC 16 are disposed in the group F; the scanner 17 and the PC 19 are disposed in the group G; the printer 20 and the

PC 22 are disposed in the group H; the modem 23 and the PC 25 are disposed in the group I; and the modem 26 and the PC 27 are disposed in the group J.

Fig. 3 is a diagram showing a graphical user interface in the client/server system 100 of Fig. 1.

The graphical user interface of Fig. 3 shows the office layout of Fig. 2, and the graphical user interface is set to be displayed on any computer as long as they are directly connected with the network 28. That is, any of the PC's 3, 6, 9, 12, 14, 16, 19, 22, 25 and 27 can display the office layout of Fig. 2 by the graphical user interface.

A user controls each equipment such as the printer 1 described above. In this case, there are cases, in one of which a computer displaying the graphical user interface is the same computer that actually performs the control of each equipment described above (hereinafter, the computer is referred to as a "client computer"), and in the other of which they are different ones.

There are four buttons indicating a "scan function", a "print function", a "copy function" and a "fax function" on the upper part in the graphical user interface of Fig. 3. These buttons severally indicate the following functions.

That is, the scan function is a function to transmit an image read with a scanner to a PC; the

print function is a function to print out a file on a
PC with a printer; the copy function is a function to
print out an image read by a scanner with a printer;
and the fax function is a function to transmit a file
5 on a PC by facsimile through a modem.

Incidentally, a computer displaying the graphical
user interface makes the flag of a usable function on
the graphical user interface at that time indicate an
enabled state, and makes the flag of an unusable
10 function indicate a disabled state. In the present
embodiment, in the initial state, the flags of only the
scan function and the print function are made to
indicate the enabled state, and the flags of the copy
function and the fax function are made to indicate the
15 disabled state.

Furthermore, as shown in Fig. 3, × marks are
given to the buttons indicating the functions having
flags indicating the disabled state among the four
buttons at the upper part of the graphical user
20 interface described above. The × marks are
automatically given to the buttons indicating the
functions having the flags the indications of which
have changed from the enabled state to the disabled
state, and the × marks are automatically removed from
25 the buttons indicating the functions having the flags
that have changed their indications from the disabled
state to the enabled state. Consequently, a user can

know which functions are now usable on the graphical user interface at a glance.

Fig. 5 is a flowchart showing the web access process of a client computer when a copy function is added as a usable function.

In the present embodiment, any one of the PC's 3, 6, 9, 12, 14, 16, 19, 22, 25 and 27 is suitably selected by user's designation or a predetermined network managing program as a client computer and a computer for displaying the aforesaid graphical user interface, severally. Incidentally, the client computer uses the software that has previously installed all functions including functions to be added as a usable function. Moreover, the removal of a × mark among the × given buttons in the aforesaid four buttons at the upper part of the graphical user interface in conformity with the following processing indicates the addition of the function as a usable function on the graphical user interface. Furthermore, although descriptions are given to a case where the copy function is added to be a usable function in the present embodiment, the cases where any of the aforesaid scan function, the print function and the fax function is added are the same.

At first, in the client computer, the button indicating the copy function is selected among the four buttons at the upper part of the graphical user

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interface shown in Fig. 4 by a user with a pointing device (Step S2). Then, the client computer detects the flag indicating the copy function selected by the user (Step S3).

5 The client computer judges whether the flag indicates the disabled state or not as a result of the flag detection at Step S3. When the flag does not indicate the disabled state, namely when the flag indicates the enabled state, the client computer
10 executes the processing at Step S10 which will be described later. On the other hand, when the flag indicates the disabled state, the client computer judges that the user has an intention of paying the price for obtaining the permission for the use of the
15 copy function to access a function addition uniform resource locator (hereinafter referred to as "URL") (Step S5), and then the client computer uploads the name of the function (copy function) and the user identification data (hereinafter referred to as "ID")
20 to the web server 31 (Step S6). Incidentally, the "function addition URL" is a URL indicating a place in the Internet in the inside of the web server 31.

 After the web server 31 has executed the process of Fig. 6 that will be described later, the client
25 computer receives a transmission of permission to use the copy function from the web server 31 (Step S8). Then, the client computer changes the indication of the

flag of the copy function from the disabled state to the enabled state, and further the client computer removes the × mark on the button indicating the copy function on the graphical user interface as shown in Fig. 7 (Step S9). Consequently, the user can identify whether the web server 31 permitted to use the copy function or not with the graphical user interface, and at the same time the user can identify the execution of charging for the copy function by the web server 31.

At Step S10, the client computer judges whether the processing of other additional functions has ended or not. When the processing has not ended yet, the client computer similarly executes the aforesaid processing at Step S2 and subsequent Steps with regard to the other additional functions, and completes the present process after the execution of the processing.

Fig. 6 is a flowchart of a process on the side of the web server 31.

The web server 31 judges whether the user ID and the name of the function were uploaded or not when the client computer accessed the function addition URL (Step S22). When it was judged that the access had not been executed as a result of the judgment at Step S22, the web server 31 executes the processing at Step S26 that will be described later. On the other hand, when it was judged that the access had been executed as the result of the judgment at Step S22, the web server 31

charges the price for the permission to use the function uploaded from the client computer to the user corresponding to the user ID uploaded from the same client computer (Step S23).

5 Next, the web server 31 judges whether the charging required to the client computer at Step S23 was executed or not (Step S24). When it was judged that the charging did not executed at Step S24, the web server 31 executes the processing at Step S26 that will
10 be described later. On the other hand, when it was judged that the charging executed at Step S24, the web server 31 transmits the permission for use to the client computer (Step S25).

 At Step S26, the web server 31 judges whether the
15 processing of other additional functions has ended or not. When the processing has not ended yet, the web server 31 similarly executes the aforesaid processing at Step S22 and subsequent Steps with regard to the other additional functions, and completes the present
20 process after the execution of the processing.

 According to the processes shown in Fig. 5 and Fig. 6, when the user has an intention of paying the price for the use of the copy function to the web server 31 though the user has not paid it yet (the case
25 where the answer to the question at Step S4 in Fig. 5 is yes), the client computer accesses the function addition URL of the web server 31 (Step S5 in Fig. 5).

Then, the price for the use of the copy function is charged by the web server 31 (Step S23 in Fig. 6).

After that, by the transmission of the fact from the web server 31 (Step S25 in Fig. 6), it becomes possible

5 that the client computer uses the copy function.

Consequently, the user can automatically pay the price for the copy function without any trouble, and the time and the costs at the time of the addition of a function can be decreased.

10 (Second Embodiment)

Next, a charging system according to a second embodiment is described. Incidentally, in the second embodiment, although the charging for a function in the enabled state is performed by the month, when the

15 function has not been used for one month or more, the charging for the function automatically stops.

Moreover, the configuration of the charging system of the second embodiment is the same as that of the first embodiment described above.

20 Fig. 8 is a flowchart showing the web access processing of a client computer when the copy function is added as a usable function. In the second embodiment, too, similarly to the process in Fig. 5 mentioned above, any one of the PC's 3, 6, 9, 12, 14,

25 16, 19, 22, 25 and 27 is suitably selected by user's designation or a predetermined network managing program as the computer for displaying the graphical user

interface and the client computer, severally. Moreover, although descriptions are given to a case where the copy function is added to be a usable function in the present embodiment, the cases where any of the
5 aforesaid scan function, the print function and the fax function is added are the same.

At first, in the client computer, the button indicating the copy function is selected among the four buttons at the upper part of the graphical user
10 interface by a user with a pointing device (Step S32). Then, after the client computer sets the time counter for the copy function at zero (Step S37), the client computer detects the flag indicating the copy function (Step S38).

15 The client computer judges whether the flag indicates the disabled state or not as a result of the flag detection at Step S38 (Step S39). When the flag of the copy function does not indicate the disabled state, namely when the flag indicates the enabled state,
20 the client computer executes the processing at Step S45. On the other hand, when the flag of the copy function indicates the disabled state, the client computer judges that the user has an intention of paying the price for obtaining the permission for the use of the
25 copy function to access a function addition URL (Step S40).

Next, by transmitting the name of the function

desired to be added as a usable function (copy function) and the user ID to the web server 31, the client computer requests the starting of the use of the desired function (Step S41).

5 After the web server 31 has executed the processing of Fig. 6 described above, the client computer receives a transmission of permission to use the copy function from the web server 31 (Step S43). Then, the client computer changes the indication of the
10 flag of the copy function from the disabled state to the enabled state, and further the client computer removes the × mark on the button indicating the copy function on the graphical user interface as shown in Fig. 7 (Step S44).

15 At Step S45, the client computer judges whether the processing of other additional functions has ended or not. When the processing has not ended yet, the client computer similarly executes the aforesaid processing at Step S32 and subsequent Steps with regard
20 to the other additional functions, and completes the present process after the execution of the processing.

 On the other hand, no button of the four existing at the upper part of the graphical user interface of the client computer was selected by the user at Step
25 S32, the client computer judges whether the flag of each button indicates the disabled state or not (Step S33). Then, the client computer counts up the time

counter of the function being not in the disabled state, namely being in the enabled state (Step S34).

Next, the client computer judges whether the time counter of the function that was counted up at Step S34
5 has continued counting for more than one month or not (Step S35). As a result, when the time counter of the function has not continued counting for more than one month, the client computer executes the aforesaid processing at Step S32 and subsequent Steps. On the
10 other hand, when the time counter of the function has continued counting for more than one month, the client computer executes the processing of the stopping of automatic payment of Fig. 9 that will be described later (Step S36).

15 Fig. 9 is a flowchart of the processing of the stopping of automatic payment of the client computer at Step 36 in Fig. 8.

At first, the client computer accesses the function addition URL of the web server 31 (Step 52).
20 Then, by transmitting the function name and the user ID of the function that has remained not being used for one month to the web server 31, the client server requests the end of the use of the function (Step S53).

After the web server 31 executed the processing
25 of Fig. 10 that will be described later, the client computer receives the transmission of the inhibition of use from the web server 31 (Step S55). Then, the

client computer changes the flag of the function from the enabled state to the disabled state, and further the client computer add a × mark on the button indicating the copy function on the graphical user interface as shown in Fig. 11 (Step S56). Then, the client computer completes the present process.

By the process of Fig. 9, the user can automatically discontinue the payment of the price for the permission of the web server 31 to use the function that has remained not been used for more than one month, and further the user can easily know the fact that it became impossible to use the function.

Incidentally, even if the user clicked an enabled function, the web server 31 judges that the user wants to end the function to execute the process of the stop of the automatic payment shown in Fig. 9, and thereby the user can terminate the charging to the function by the month.

Fig. 10 is a flowchart of process on the side of the web server 31 corresponding to Step S53 and Step S55 in Fig. 9.

The web server 31 detects the existence of access from the client computer to the function addition URL (Step S62), and the web server 31 detects which a request from the client computer is, the request for the start of use or the request for the end of use (Step S63).

Next, the web server 31 judges whether the request detected at Step S63 is the request for the end of use or not (Step S64). When it was judged that the request is not the request for the end of use, namely
5 the request is the request for the start of use, as a result, the web server 31 charges a price for the permission to use the function desired to be used, which was uploaded from the client computer, to the user ID uploaded from the same client computer (Step
10 S65).

Next, the web server 31 judges whether the charging was performed or not at Step S65 (Step S66). When the charging was not performed, the web server 31 ends the present process as it is. On the other hand,
15 when the charging was performed, the web server 31 transmits the permission for use to the client computer (Step S67).

On the other hand, when it was judged that the request is the request for the end of use as the result
20 of the judgment at Step S64, the web server 31 ends the charging of the function transmitted from the client computer (the function that has remained not being used for more than one month) by the month to the user corresponding to the user ID transmitted from the same
25 client computer (Step S68), and the web server 31 transmits the inhabitation of the use of the function to the client computer (Step S69).

At Step S70, the web server 31 judges whether the processing of other additional functions has ended or not. When the processing has not ended yet, the web server 31 similarly executes the aforesaid processing at Step S62 and subsequent Steps with regard to the other additional functions, and completes the present process after the execution of the processing.

According to the processes shown in Fig. 8 to Fig. 10, when a month has passed while the user has remained not using the copy function and the user had paid the price for the use of the copy function (the case where the answer to the question at Step S35 in Fig. 8 is yes), the client computer accesses the function addition URL in the web server 31 (Step S52 in Fig. 9) to end the charging to the function remained not being used for more than one month (the copy function) by the month (Step S68 in Fig. 10). Consequently, it can be prevented that the user unnecessarily pays the price for the function that has not been used.

Moreover, it is needless to say that the present invention can be applied to a case where the method for the automatic charging of the aforesaid embodiments is realized by the supply of the record medium storing a program module of the software for the execution of the method to a system or an apparatus. In this case, the program module read from the record medium itself realizes the novel functions of the invention, and the

record medium storing the programs constitutes the present invention.

The program module of the aforesaid each embodiment is severally stored in the web server 31, a computer displaying the graphical user interface, and a client computer. As the record medium storing the program module, the following recording media can be used: for example, a floppy disk, a hard disk, an optical disk, a photomagnetic disk, a CD-ROM, a CD-R, a DVD, a magnetic tape, a nonvolatile storage card, and the like.

Although the invention has been described in its preferred form with a certain degree of particularity, obviously many changes and variations are possible therein. It is therefore to be understood that the present invention may be practiced than as specifically described herein without departing from scope and the spirit thereof.